Tt's fun to use a Microscope to look at my world."

You may have seen my video series on my web site at: www.microscopy-uk.org.uk/ pippa/ or www.pippasprogress.net

It doesn't matter if you haven't because this book will show you everything I know about using a microscopy and enjoying some exciting adventures with it.

Did you know that Microscopy is a hobby just like amateur astronomy? There are several clubs you can join in the UK, Europe and the USA. I'll list them at the back of this book.

Microscopy shows you things in life that nothing else can. It is also very important in the modern world. The use of a microscope is everywhere: in crime detection, in industry, computer technology, health, paint manufacturing, archaeology, farming, bee keeping, and many other areas.

As a hobby, you can do it on your own on sunny days and winter ones. You can find things all the time to look at and learn about—on holiday, in your home, the park, your garden, everywhere!

I am Pippa. Microscopy is something I love. I want you to love it too so we can have some fantastic adventures together. If you are aged six to say—sixteen, this book should have something great to offer you. Me? I'm twelve years old. Let's get started. MP... PIPPA



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Each lens is marked with how many times it magnifies. The evepiece lens at the top of the Most specimens need to be tube is also marked with a power of magnification-

you discover the total amount you are magnifying the specimen.

transparent to see them in a compound microscope. NonBe careful when switching between objective lenses by leaving a gap between the slide and the lens. Always look first.



EYE PIECES—TWO FOR STEREO 3D You see one circle of light and the specimen in 3D. Great for observing tiny living insects.

STEREO TUBES Adjust these so you see only one circle of light

FOCUS CONTROL Just one focus control to see a clear image

TWIN OBJECTIVES No other objectives on this stereo. Some stereo microscopes have more objectives

OVER-STAGE LIGHT

LIGHT SWITCH. (off or on)

STEREO MICROSCOPE CONTROLS

CALIPERS AND STAGE

SCRUNCHED UP

CELL

6

Wipe a clean cotton bud against the inside of your cheek.

This will collect some cheek cells onto the bud.

Wipe the cotton bud onto a clean glass specimen slide.

Under the compound microscope you will see many scrunched up cells, but also some perfectly flat ones.

The dark round nucleus can be seen quite easily even without the need to stain the specimen. The nucleus is the control centre and chemical factory of the single cell.



Looking at single cells under a compound microscope

ONE CHEEK CELL

NUCLEUS

STUDYING PLANT HAIRS: THE STINGING NETTLE



Fine glass-like tip

When you brush against a nettle, you break the fine tip off. The broken hair pierces your skin like a glass needle. The pressure pushes the hair down and squeezes the bulb. The chemicals in the bulb are forced up inside the hollow hair and flow into you. Stinging nettle leaves are great to look at under both the stereo and the compound microscopes. Pick one leaf (make sure to wear a glove and that the nettle does not touch you).

Tape the leaf at each end to a glass slide with sellotape or just place it on the stage and use tweezers to move it around.

You need an over-stage light to see it properly or use a desk lamp or torch. Try focusing on the tip and then on the bulb of the hair. The bulb is at the base and contains the irritant chemicals.

You will probably not be able to focus on the tip and the bulb at the same time. Try moving the light around to get different views.

Stinging nettles sting harder when they are at the start of summer rather than in the autumn. No one knows for certain what the mix of chemicals are in the nettle hair bulb or which compounds cause the irritation. The myth that Dock leaves relieve the pain is untrue, although their coldness may help soothe the area a little. If you treat the leaf roughly, the more likely you are to destroy the bulbs with the poison in.



Get excited! We're going to explore the strange world out there!

ippa's progress

EXPLORATION OUT

WWW.MICROSCOPY-UK.ORG.UK/PIPPA